

CLAIMS

1. A device for treating a particle-laden gaseous medium, having at least one corona-effect electrostatic filter (20; 130') comprising:

- 5 - a longitudinal casing;
- a longitudinal channel (28) for the gases, extending in the casing and with its two opposite ends adjacent to the gas inlet (22) and outlet (23) of the electrostatic filter, respectively;
- an emitting structure (32, 134') extending longitudinally and roughly at the centre of  
10 the channel; and
- a collecting structure (24; 140') extending longitudinally between the channel and the casing and comprising a plurality of cavities forming sites for trapping the particles contained in the gaseous medium;

characterized in that

- 15 the emitting structure comprises a plurality of serrated plates (32; 134') arranged transversely to the longitudinal direction of the channel and forming points directed towards the collecting structure (24; 140').

2. A treatment device according to claim 1, characterized in that the serrated plates are constituted of stars that are to be connected to a circuit supplying a stabilized  
20 high voltage.

3. A treatment device according to claim 1 or 2, characterized in that the collecting structure comprises a separator made from metal wire fabric.

4. A treatment device according to claim 3, characterized in that the separator is of cylindrical shape and surrounds the serrated plates of the emitting structure, aligned on  
25 the axis of the cylindrical shape of the collecting structure.

5. A treatment device according to any one of the claims 1 to 4, characterized in that the emitting structure and the collecting structure are mounted on a supporting structure with which they form a removable filter cartridge of the treatment device.

6. A treatment device according to any one of the claims 1 to 5, characterized in  
30 that the serrated plates alternate with perforated washers or rings (33) that are arranged transversely to the longitudinal direction of the channel.

7. A treatment device according to any one of the claims 1 to 6, characterized in that it has a gas inlet and outlet extending transversely to the longitudinal channel for these gases, and the serrated plates are carried by a rod connected to a circuit that supplies a stabilized high voltage and which is carried, at each of its ends, by an insulator  
5 protected by a bell.

8. A treatment device according to any one of the claims 1 to 7, characterized in that it has a second electrostatic filter having metal stars carried by one face of a perforated metal disk (133) connected to the circuit supplying a stabilized high voltage and mounted upstream of a separator (132) of cylindrical shape, made from a metal wire  
10 fabric.

9. A treatment device according to any one of the claims 1 to 8, characterized in that it has an oxidation catalyst (120) with monolithic support, upstream of the electrostatic filter or filters.

10. A treatment device according to any one of the claims 1 to 9, characterized in that it has a mechanical filter (110) upstream of the electrostatic filter or filters and, if appropriate, of the oxidation catalyst (120).  
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11. A treatment device according to claim 10, characterized in that the mechanical filter (110) comprises a metal mesh filter (114), defining a forced channel for the gaseous medium entering the treatment device and associated with an electrical resistance (113) that is able to raise the temperature of the gaseous medium.  
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12. A treatment device according to any one of the claims 1 to 11, characterized in that it has an inlet for oxidation air and/or an inlet for cleaning air (141).

13. A treatment device according to any one of the claims 1 to 12, characterized in that it has aspirating means (150) downstream of the electrostatic filter or filters (130, 130').  
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14. A treatment device according to any one of the claims 1 to 13, characterized in that it has at least one cylindrical casing for housing the electrostatic filter or filters and, if appropriate, the oxidation catalyst (120) and/or the mechanical filter (110).

15. Use of a treatment device as defined by any one of the claims 1 to 14 for  
30 treating exhaust gases from an internal combustion engine.

16. A vehicle equipped with a treatment device as defined by any one of the claims 1 to 15.